ANNUAL REPORT FOR 2006

Campbell Creek Mitigation Site
Beaufort County
TIP No. R-2510WM

Natural Environment Unit & Roadside Environmental Unit
North Carolina Department of Transportation
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SUMMARY

The following report summarizes the monitoring activities that have occurred in 2006 at the Campbell Creek Mitigation Site. The Campbell Creek site was constructed to provide compensatory mitigation to offset impacts for Tetterton Road (SR 1963). The 2006-year represents the first year of hydrology and vegetation monitoring following construction. The site must demonstrate hydrologic and vegetation success for a minimum of five years or until the site is deemed successful. The project site is located approximately seven miles east of Aurora in Beaufort County.

The site must be monitored for five years following site construction or until success criteria are met. The success of the marsh vegetation component of the wetland site will be determined in accordance with National Marine Fisheries Service guidelines. The site is monitored with thirty vegetation plots and five surface water monitoring gauges. Data analysis includes an examination of all recorded site data as well as an assessment of local climate conditions throughout the growing season.

In July 2006, five surface water gauges were installed to monitor hydrology on the site. Four surface gauges were positioned in the restoration portion of the mitigation site. Also, one surface gauge was installed as a reference gauge within the preservation area.

Hydrologic success criteria are based on the approved mitigation plan and require that the site demonstrate frequent periods of inundation. The surface water gauges will then be compared to the reference gauge to show that the inundation patterns are similar. The 2006-year represents the first year of hydrologic monitoring for the Campbell Creek Site. The four surface water gauges were compared to the one reference gauge. The surface water monitoring gauges showed periods of inundation similar to that of the reference gauge during the 2006 monitoring year.

For the vegetation monitoring in the marsh grass area, the target species and scale values were 57% and 0.7, respectively. The site was planted in June 2006. The planted vegetation is surviving in certain sections of the site. Due to the low survival numbers, NCDOT proposes to replant the site in 2007.

Based on the results from the first year of monitoring, NCDOT will continue to monitor vegetation and hydrology at the Campbell Creek Site in 2007.

1.0 INTRODUCTION

1.1 Project Description

The Campbell Creek site was constructed to provide compensatory mitigation to offset impacts for Tetterton Road (SR 1963). The project site is located approximately seven miles east of Aurora in Beaufort County. The project is comprised of two separate properties totaling approximately 40 acres. One property is adjacent to Campbell Creek and is referred to as the southern property (approximately 29 acres). At this time construction has been completed only on the southern property. Construction and marsh grass planting on the northern property is scheduled for Spring 2007.

1.2 Purpose

In order to demonstrate successful mitigation, hydrologic and vegetation monitoring must be conducted for a minimum of five years or until the site is deemed successful. Vegetation success criteria are based on the National Marine Fisheries Service guidelines. Hydrologic success criteria are based on the approved mitigation plan and require that the site demonstrate frequent periods of inundation. The surface water gauges will then be compared to the reference gauge to show that the inundation patterns are similar. Included in this report are analyses of hydrologic and vegetation-monitoring results, discussions of local climate conditions throughout the growing season and site photographs.

1.3 Project History

April 2006	Site Constructed
June 2006	Site Planted
July 2006	Monitoring Gauges Installed
July-November 2006	Hydrologic Monitoring (Year 1)
August 2006	Marsh Vegetation Monitoring (Year 1)

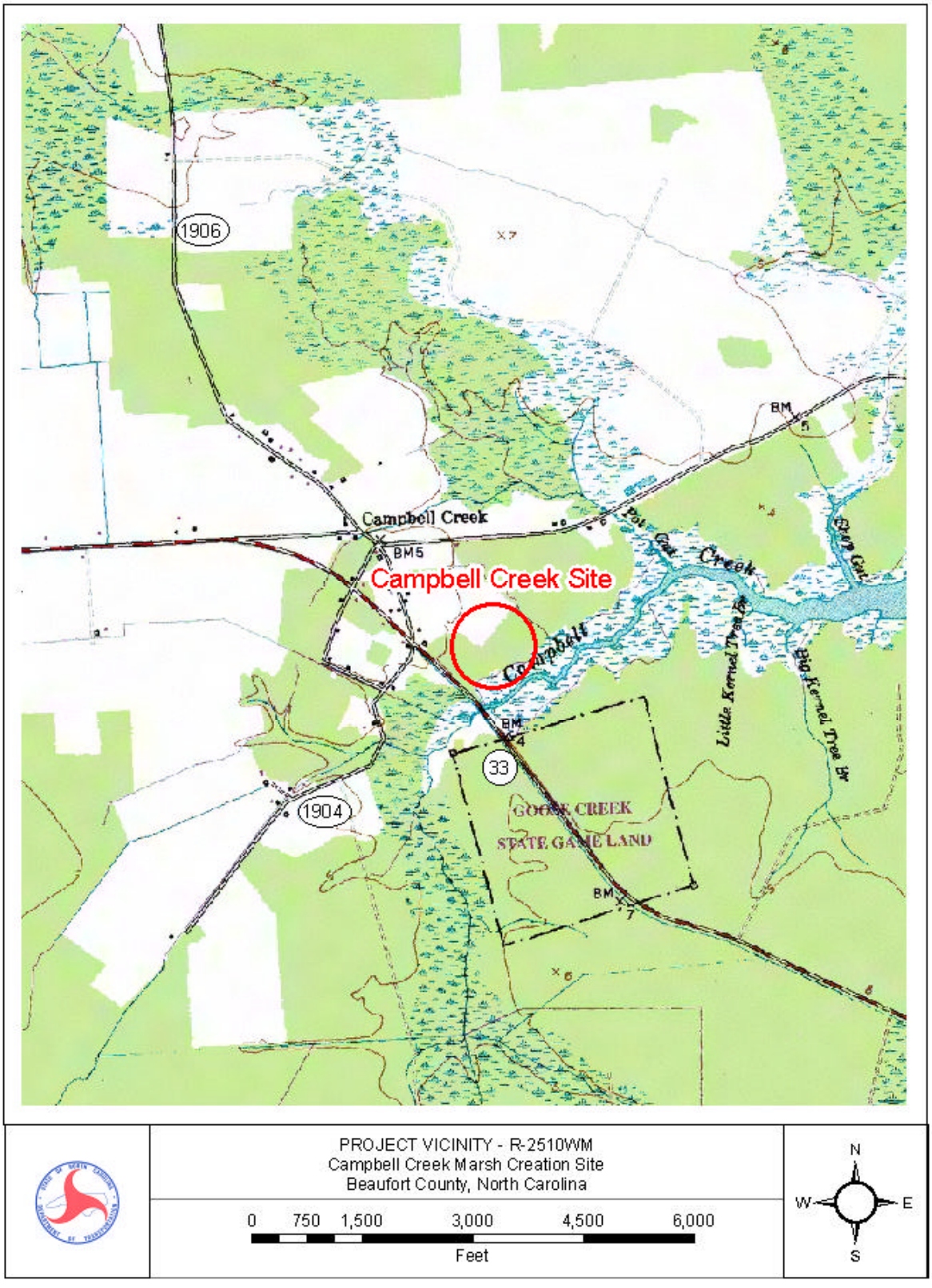


Figure 1. Site Location Map

2.0 HYDROLOGY

2.1 Success Criteria

The hydrologic success criteria established for the Campbell Creek Mitigation Site, as stipulated in the approved mitigation plan and subsequent revisions, require that the site demonstrate frequent periods of inundation. The surface water gauges will then be compared to the reference gauge to show that the inundation patterns are similar. Groundwater monitoring is not required at this site since it is a wind driven tidal system.

2.2 Hydrologic Description

Wind-driven tides are the primary hydrologic input at the Campbell Creek Site southern property; therefore, four surface water monitoring gauges were installed within the sites restoration area (Figure 2) in July 2006. There is also one reference gauge located directly adjacent to the constructed site, within the preservation area. The surface gauges record surface water levels every three hours on a daily basis. Monitoring data for 2006 represents the first year of hydrologic monitoring for the site.

2.3 Results of Hydrologic Monitoring

2.3.1 Site Data

Appendix A contains plots of the data at each surface gauge location. The set of plots shows the surface water elevation recorded against the actual gauge elevation surveyed relative to mean sea level. All four of the surface gauges as well as the reference gauge show that the site is demonstrating frequent periods of inundation.

2.3.2 Climatic Data

Precipitation is not the primary hydrologic input for this site and was not included in this report. It is expected that the site would show the required periods of inundation regardless of area rainfall totals.

2.4 Conclusions

The 2006-year represents the first year of hydrologic monitoring for the Campbell Creek mitigation site. The four surface water gauges were compared to the one reference gauge. The four surface water monitoring gauges showed periods of inundation similar to that of the reference gauge during the 2006 monitoring year.

NCDOT will continue to monitor the Campbell Creek Mitigation Site for hydrology.

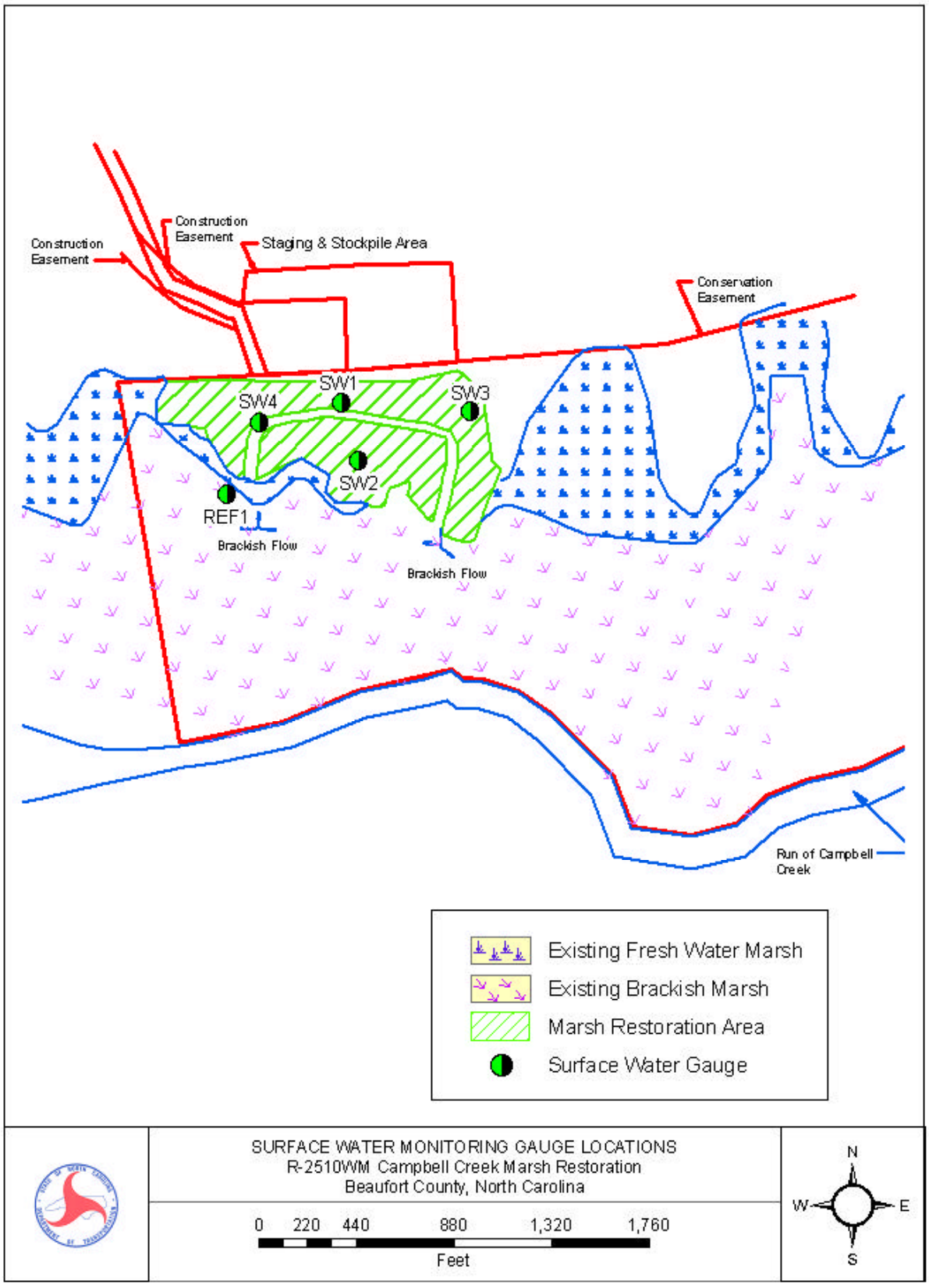


Figure 2. Monitoring Gauge Location Map

3.0 VEGETATION: CAMPBELL CREEK (YEAR 1 MONITORING)

3.1 Success Criteria

The vegetative marsh success of the wetland site will be determined in accordance with NMFS Guidelines. Monitoring plots found to be located within the open water channel will not be evaluated, and will not count toward the final count of plots. The vegetation component of the wetland site will be deemed successful if the following criteria are met:

1. At year five, the average of all plots should have a scale value of 5 (>75% vegetative cover) consisting of wetland herbaceous species, not including any invasive species.
2. A minimum of 70% of the plots shall contain the target (planted) species.

3.2 Description of Species

The following marsh grass species were planted in the Wetland Restoration Area:

Cladium jamaicense, Sawgrass

Juncus roemerianus, Black Needle Rush

3.3 Results of Vegetation Monitoring

Table 1. Vegetative Monitoring Results

Plot #	Scale Factor	*Cladium jamaicense*	*Juncus roemerianus*	Frequency	Comments
1	0.0				Bare Ground
2	1.0		✓	✓	
3	2.0		✓	✓	
4	1.0		✓	✓	
5	0.0				Bare Ground
6	0.0				Bare Ground
7	0.0				Bare Ground
8	0.0				Bare Ground
9	0.0				Bare Ground
10	0.0				Bare Ground
11	1.0	✓		✓	
12	1.0	✓	✓	✓	
13	1.0	✓		✓	*Cyperus* sp.
14	0.0				Bare Ground
15	0.0				Bare Ground
16	1.0	✓		✓	
17	0.0				Bare Ground
18	2.0	✓	✓	✓	
19	1.0		✓	✓	
20	1.0		✓	✓	
21	1.0		✓	✓	*Pluchea* sp. and wire grass
22	0.0				Bare Ground
23	0.0				Bare Ground
24	1.0	✓		✓	
25	0.0				Bare Ground
26	1.0	✓		✓	
27	2.0		✓	✓	
28	1.0		✓	✓	
29	2.0	✓	✓	✓	
30	1.0	✓		✓	
Frequency (Percentage of Plots with Desired Species)				57.0%	
Sum Scale Value				21.0	
Total Number of Plots				30	
Vegetative Cover (Scale Value)				0.7	

3.4 Conclusions

Percent Frequency of Target Species **57 %**
Frequency of 70% required.

Vegetative Cover Scale Value **0.7**

Scale Value of 5 required for year 5.

The site was planted in June 2006. The planted vegetation is surviving in certain sections of the site. Due to the low survival numbers, NCDOT proposes to replant the site in 2007.

NCDOT proposes to continue vegetation monitoring at the Campbell Creek Mitigation Site.

4.0 OVERALL CONCLUSIONS/RECOMMENDATIONS

The 2006-year represents the first year of hydrologic monitoring for the Campbell Creek Site. The four surfaced water gauges were compared to the one reference gauge. The surface water monitoring gauges showed periods of inundation similar to that of the reference gauge during the 2006 monitoring year.

For the vegetation monitoring in the marsh grass area, the target species and scale values were 57% and 0.7, respectively. The planted vegetation is surviving in certain sections of the site. Due to the low survival numbers after the first year of monitoring, NCDOT proposes to replant the site in 2007.

Based on the results from the first year of monitoring, NCDOT will continue to monitor the vegetation and hydrology at the Campbell Creek Site in 2007.

APPENDIX A

GAUGE DATA GRAPHS

APPENDIX B

PHOTO AND VEGETATION PLOT LOCATIONS, SITE PHOTOS

Campbell Creek

Photo 1

Photo 2

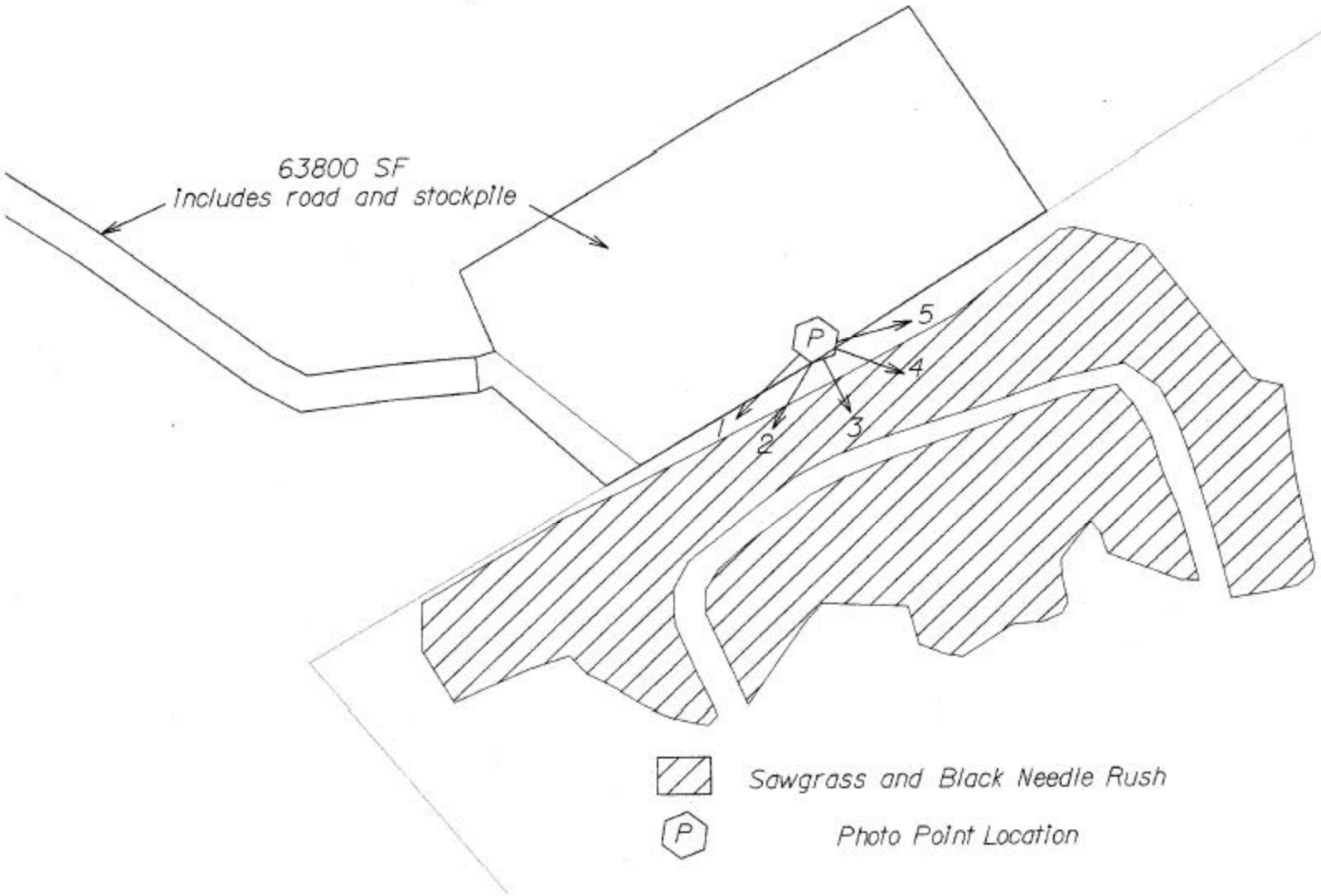
Photo 3

Photo 4

Photo 5

August 2006

Campbell Creek Mitigation Site
Planting Plan and Photo Point Location



Campbell Creek Mitigation Site
2006 Marsh Grass Random Points